

THREE NEW ECUADORIAN SPECIES OF THE AQUATIC
BEETLE GENUS *CHAETARTHRIA*
(COLEOPTERA: HYDROPHILIDAE)

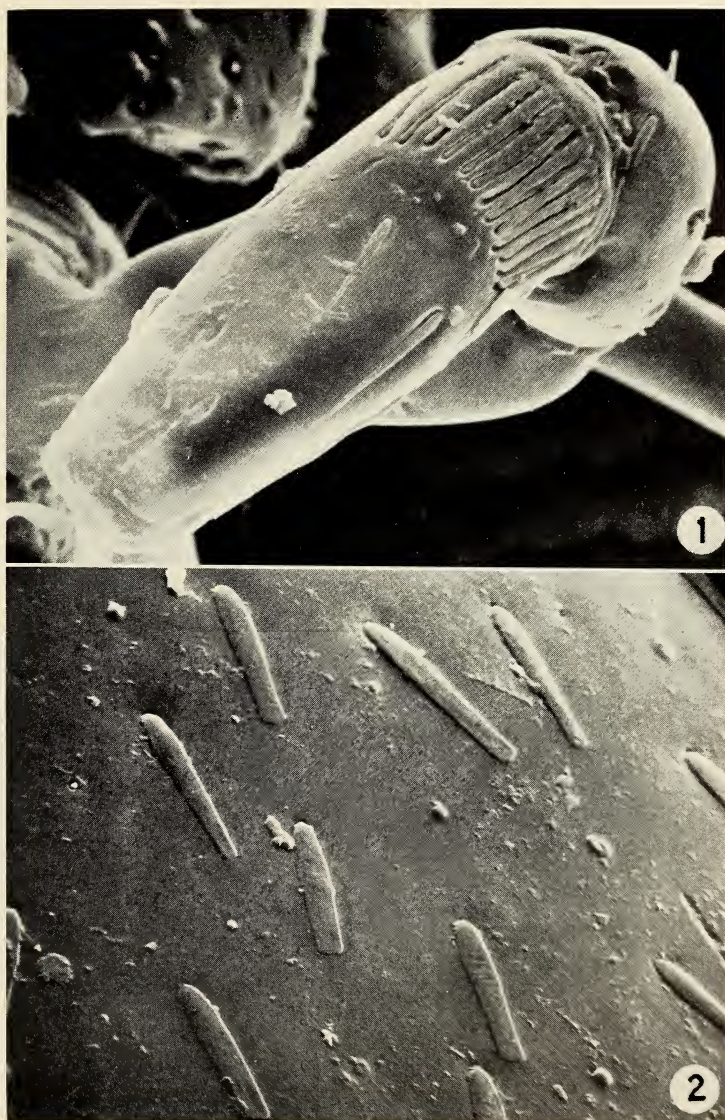
Paul J. Spangler

In 1975, a cooperative survey of the aquatic insects of Ecuador was initiated between the Ecuadorian Ministry of Agriculture, the Peace Corps, and the Smithsonian Institution. Since that time, approximately 250,000 specimens have been collected in Ecuador, mostly by two Peace Corps Volunteers, Ms. Andrea Langley and Mr. Jeffrey Cohen. Both volunteers have contributed considerable time, and effort to this project; and when all of their specimens have been studied by systematic entomologists, the aquatic insect fauna of Ecuador should be better known than that of any other South American country. Among the specimens already examined, many have been recognized as new taxa; others extend to South America ranges of species known previously only from Central America; and still others greatly extend the known range of South American species. Therefore, in recognition of their efforts in surveying the aquatic insect fauna of Ecuador and to acknowledge my deep appreciation to them, I am dedicating two of the following new species to Andrea Langley and Jeffrey Cohen, my friends and pleasant companions on several fieldtrips. The third new species is dedicated to Dr. David Miller, New York City College, whose recent revision (1974) of the genus *Chaetarthria* aided me in recognizing these taxa as new species.

Chaetarthria coheni, new species
Figs. 1-10

Holotype male.—Length 1.6 mm; greatest width 1 mm, at midlength. Color of head black. Pronotum yellowish brown. Elytra yellowish brown, humeral areas darker brown. Scutellum darker brown than elytra. Ventral surface black except palpi, antennae, hypopleura, epipleura, and legs yellowish brown.

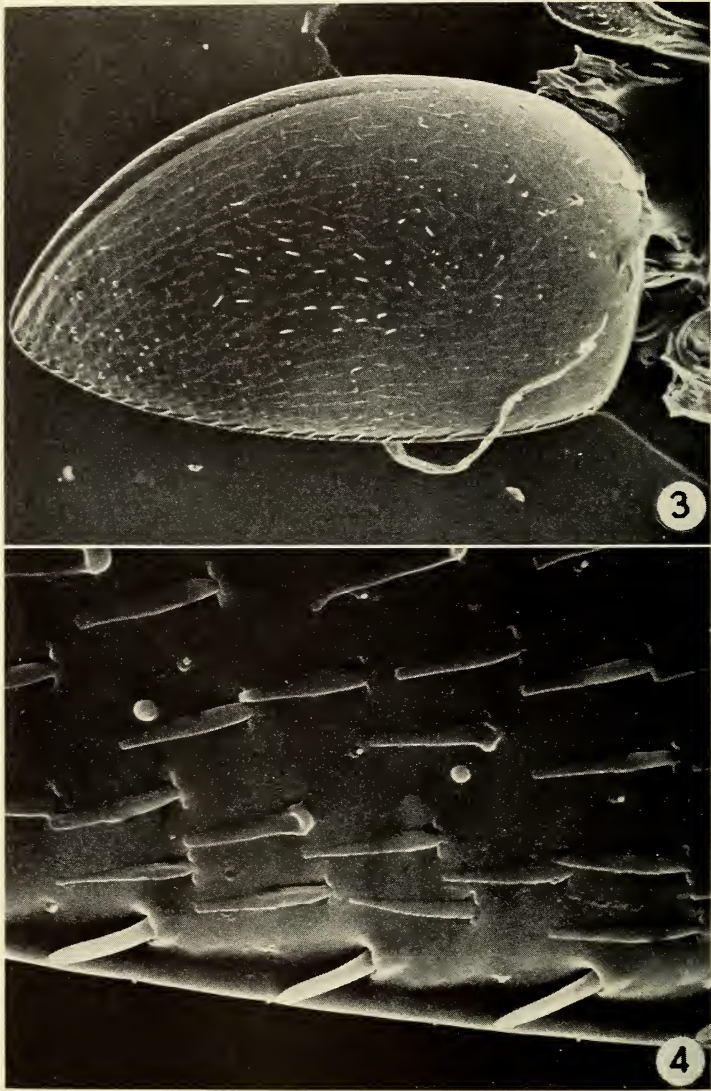
Body broadly oval, strongly convex. Head with moderately large, shallow, sparse punctures. Labrum finely, moderately densely punctate. Last segment of maxillary palpus partially ringed with sensilla at base (Fig. 1). Pronotal punctures moderately coarse and denser along anterior, lateral, and posterior margins, each puncture bearing a seta (Fig. 2); disc almost impunctate. Elytral punctures generally in serial rows (Fig. 3); punctures fine on disc, coarser and deeper laterally and apically; each puncture bearing a slender yellow seta (Fig. 4). Sutural stria distinct and extending from apex anteriorly for two-thirds the length of the elytron. Protibia in



Figs. 1-2. *Chaetarthria coheni* n. sp.: 1, maxillary palpus, apical segment, 800 \times ; 2, pronotal surface, 750 \times .

anterior view widening from base to apical three-fifths then narrowing slightly to apex (Fig. 5); inner face of apical portion with a series of 3 suckerlike setae (Figs. 6, 7, 8). Aedeagus as illustrated (Figs. 9, 10).

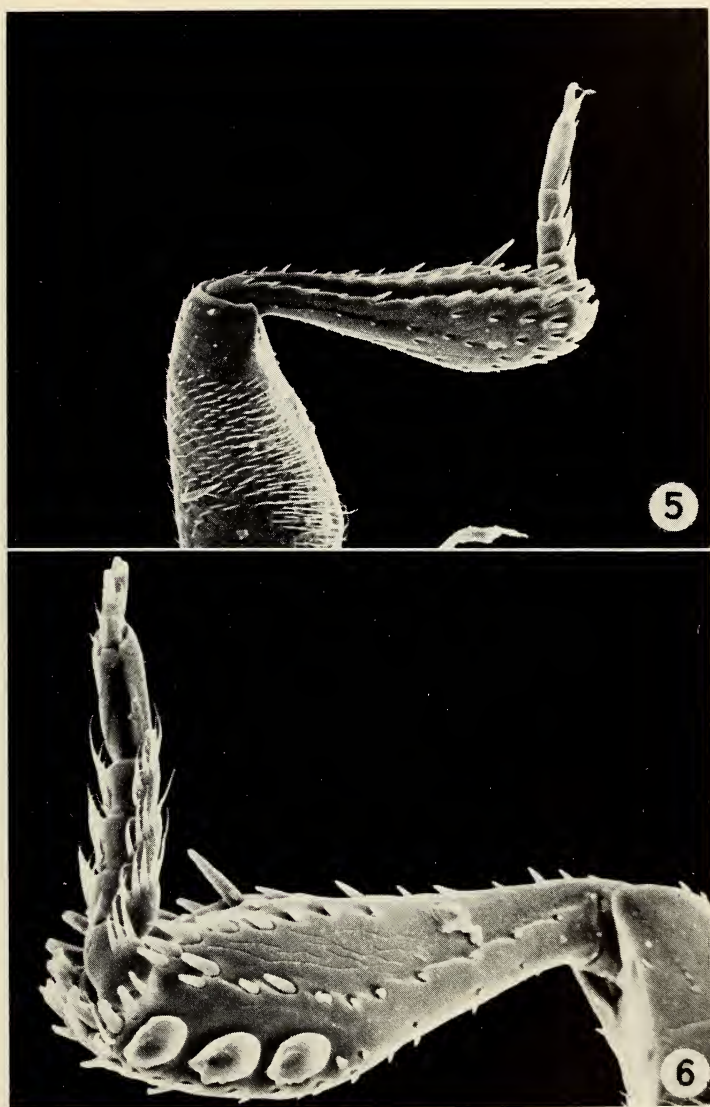
Allotype.—Similar to male except front tibia of female widens gradually



Figs. 3-4. *Chaetarthria coheni* n. sp.: 3, elytron, 60 \times ; 4, elytral surface, 500 \times .

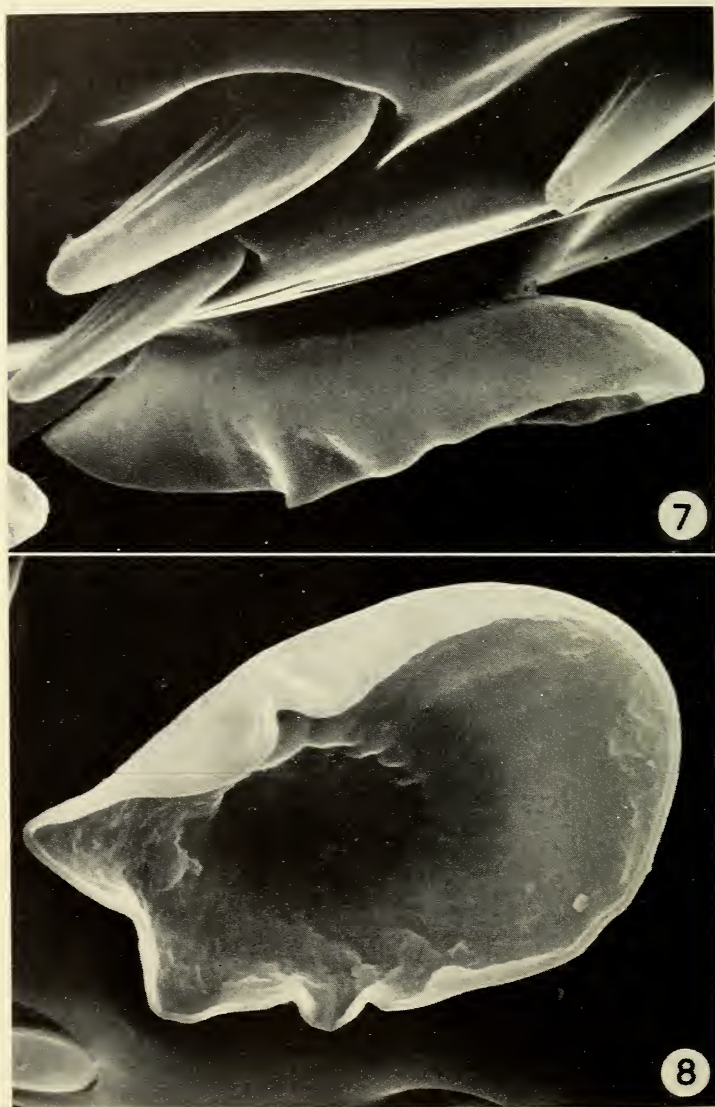
from base to apex instead of only to apical three-fifths and lacks the 3 suckerlike setae.

Type-data.—Holotype male; ECUADOR: Guayas Province, Olon, 29 February 1976, Jeffrey Cohen, in blacklight trap; USNM Type No. 73828, deposited in the National Museum of Natural History, Smithsonian Insti-



Figs. 5-6. *Chaetarthria coheni* n. sp., front leg: 5, anterior view, 165 \times ; 6, posteromedial view, 260 \times .

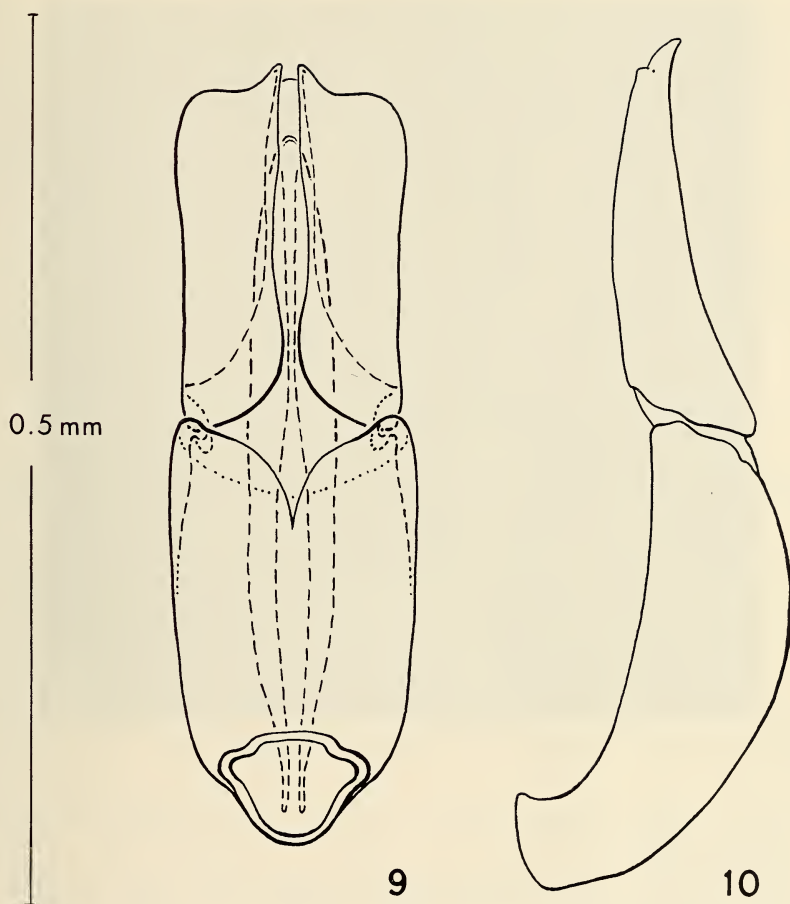
tution. Allotype, same data as holotype. Paratypes: ECUADOR: Same data as holotype, 48 δ δ , 39 f f ; Los Rios Province, Quevedo (11 km south), 3 July 1975, at blacklight, Langley and Cohen, 1 δ . Paratypes will be deposited in the following museums: American Museum of Natural History; British Museum (Natural History); California Academy of Sciences; Ca-



Figs. 7-8. *Chaetarthria coheni* n. sp., suckerlike seta on male protibia, 2,400 \times ; 7, lateral view; 8, ventral view.

nadian National Collection; Museum of Comparative Zoology (Harvard); Royal Institute of Natural Sciences of Belgium; and in the private collection of Dr. David C. Miller.

Etymology.—I take great pleasure in naming this new species in honor of Jeffrey Cohen, collector of this species.



Figs. 9–10. *Chaetarthria coheni* n. sp., male genitalia: 9, ventral view; 10, lateral view.

Recognition of the new species *Chaetarthria coheni*, described above, was facilitated by the recent revision of the genus by Miller (1974). In Miller's key to the species of *Chaetarthria*, the taxa from North and Central America key to the first rubric of the first couplet, and those species from South America key to the second rubric of his first couplet; therefore, males of *C. coheni* key from the second rubric of couplet 1 to couplet 43 where they may be distinguished by interpolating the following at couplet 43.

43. Male protibia with 3 or 4 flat, slanting setae (Fig. 11) or suckerlike setae (Fig. 6) on inner (medial) face



Fig. 11. *Chaetarthria pallida* LeConte, flattened protibial setae.

- Male protibia usually with 5 or more flat, slanting setae on inner (medial) face 44
- 43a. Male protibia with 3 suckerlike setae (Fig. 6) on inner (medial) face; Ecuador *coheni*, new species
- Male protibia with 4 flat, slanting setae on inner (medial) face; Argentina *hermani* Miller

If, however, one keys *C. coheni* through the first rubric (i.e., to the North American species) in Miller's first couplet, *C. coheni* runs to *C. veracruzensis* Miller in couplet 16 because the protibia of the males of both species has three suckerlike setae on the inner (medial) face. These two species are the only two New World species presently known to have three suckerlike setae on the male protibia, and they resemble each other very closely. However, the distinctive male aedeagus of *C. coheni* will distinguish that species from *C. veracruzensis* and all other described New World species.

This new species, *C. coheni*, agrees with the characters Miller gave for the five species—*flava* Miller, *granulata* Miller, *magna* Miller, *spangleri*

Miller, and *veracruzensis* Miller—which he placed in the *spangleri* group; i.e., species with the following characters: pronotum and elytra yellow to nearly black; protibia of male “elbowed” or with rounded angle on inner margin; median or posterior face of apical portion of protibia with 2–5 stalked (suckerlike setae) discs; male metasternum without larger bristles; parameres, taken together, slightly longer to much longer than wide. Therefore, *C. coheni* represents the sixth species in this group and the second species of the group known from South America.

In Miller's proposed phylogeny of the New World *Chaetarthria*, *C. coheni* should be placed next to *C. veracruzensis* because both species have the three suckerlike setae on the inner (medial) face of the male protibia and are very similar in most other characters.

Chaetarthria andrea, new species

Figs. 12, 13

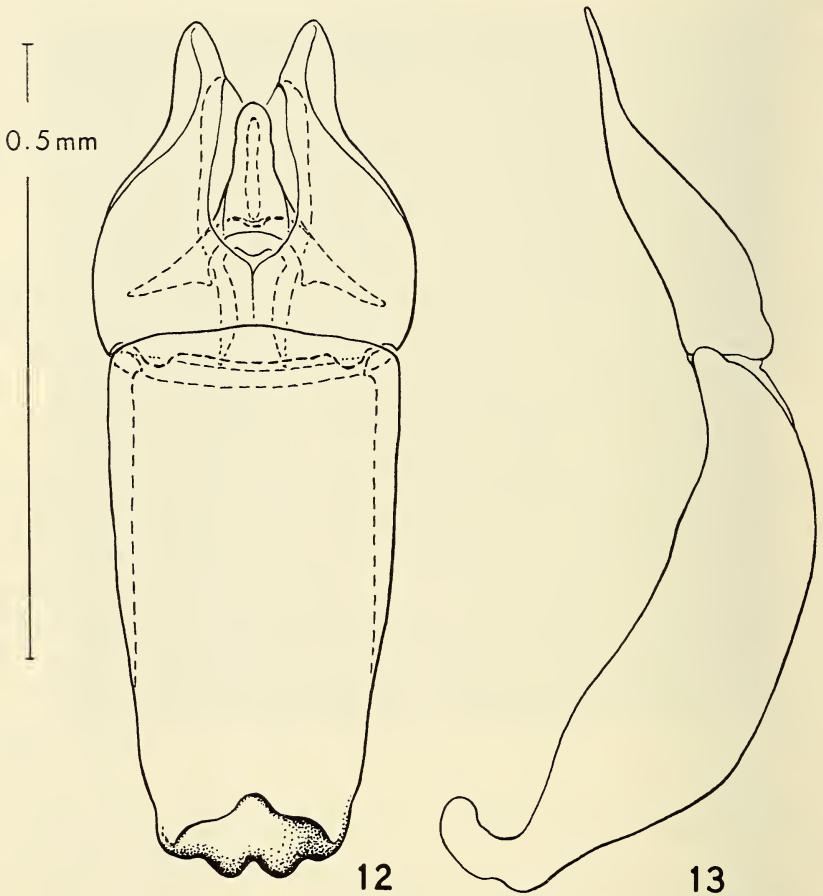
Holotype male.—Length 1.4 mm; greatest width 1 mm, at midlength. Color of head dark reddish brown, almost piceous, disc piceous; pronotum dark reddish brown except lighter reddish brown along lateral margins; elytra dark reddish brown on base and discally but becoming abruptly testaceous laterally and extending obliquely to suture at apical sixth. Ventral surface reddish brown with labial and maxillary palpi testaceous.

Body broadly oval, strongly convex. Head with fine, widely spaced punctures; interocular punctures separated by four to six times their diameters. Labrum similarly finely punctate but punctures closer together than those on interocular area; punctures separated by about three times their diameters. Last segment of maxillary palpus partially ringed with sensilla at base. Pronotum with few very fine and very sparse punctures laterally; disc virtually impunctate. Elytra with punctures very fine discally; with faint indications of fine rows on disc, becoming more distinct laterally where 2 partial rows of very coarse punctures are present at midlength; intervals also with fine, sparse punctures. Sutural stria distinct and extending from apex anteriorly for two-thirds the length of the elytron. Protibia in anterior view very gradually diverging at base, then almost straight to apex; inner face of apical portion with a single large spine. Aedeagus as illustrated (Figs. 12, 13).

Allotype.—Only the unique holotype is known.

Type-data.—Holotype male; ECUADOR: Napo Province, Lago Agrio (3 kms northeast), 17 May 1975, at Pozo No. 23, P. J. Spangler and Andrea Langley; USNM Type No. 73829, deposited in the National Museum of Natural History, Smithsonian Institution.

Etymology.—I take great pleasure in naming this new species in honor of Andrea Langley for the reasons mentioned in the introductory para-



Figs. 12-13. *Chaetarthria andrea* n. sp., male genitalia: 12, ventral view; 13, lateral view.

graph. The specific name *andrea* is used in apposition to the generic name.

Recognition of the new species *Chaetarthria andrea*, described above, also was facilitated by Miller's revision of the New World species of the genus. Because the first rubric in Miller's first couplet separates the North and Central American taxa from the South American species (second rubric), *andrea* keys from the second rubric to couplet 41. Because *C. andrea* and the next new species described, *C. milleri*, run to couplet 41 in Miller's key, both have been interpolated in his key in the couplets following the description of *C. milleri*.

If one keys *C. andrea* through Miller's first rubric (i.e., the North American species) in his first couplet, *C. andrea* keys to *C. glabra* Sharp in couplet 19 because the male protibia has the sides evenly divergent from the base to the apex and lacks special transverse plates or suckerlike setae on the inner face of the apical portion. Like those of *C. glabra*, the male protibiae of *C. andrea* are not "elbowed" and they have one long spine on the inner face of the apical portion. However, from *C. glabra* and all other described species of *Chaetarthria* in the Western Hemisphere, *C. andrea* may be distinguished by its distinctive male genitalia.

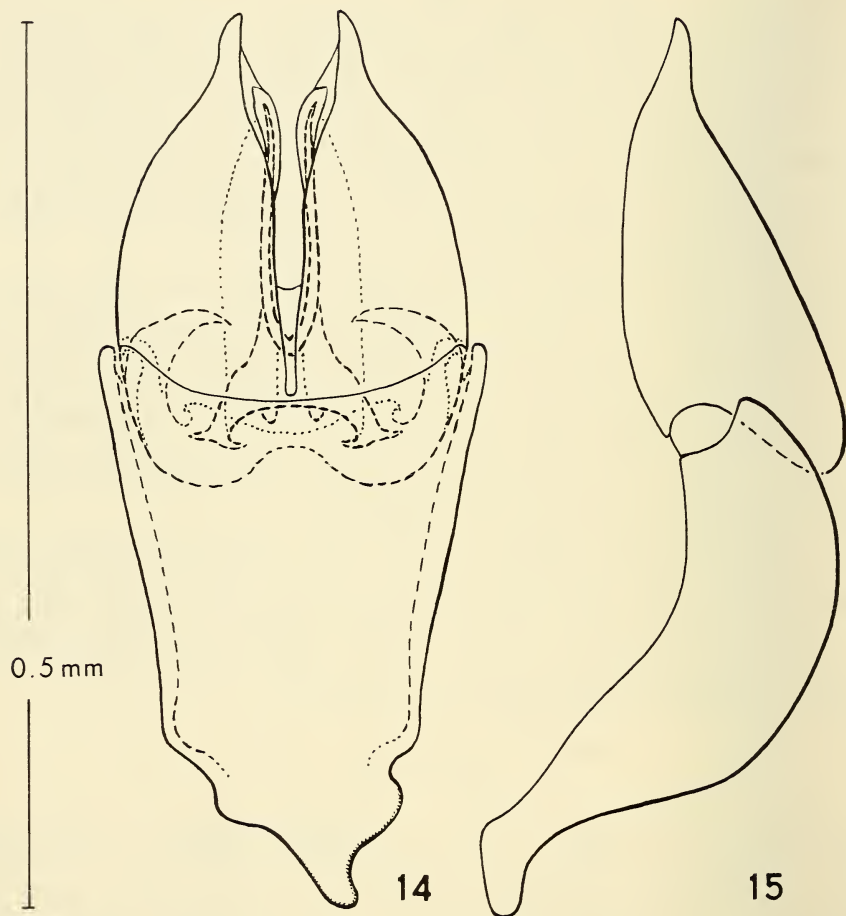
The new species *C. andrea* agrees with the characters Miller gave for the four species—*C. glabra* Sharp, *C. hintoni* Miller, *C. laeticula* Miller, and *C. truncata* Miller—which he placed in the *glabra* group; i.e., species which have the following characters: dorsum brown to black; protibia of males not "elbowed," lacking special armature on inner face; male metasternum without larger bristles; and parameres forming nearly a square. Consequently, *C. andrea* represents the fifth species in this group and the first species of the group known from South America.

In Miller's proposed phylogeny of the New World *Chaetarthria*, the new species *C. andrea* should be placed next to *C. glabra* with which it agrees fairly well in being smooth, shining, and almost without punctures or vestiture. However, *C. andrea* is dark reddish brown tending to be piceous with sharply demarcated testaceous elytral apices; whereas, *C. glabra* is completely dark reddish brown dorsally.

Chaetarthria milleri, new species

Figs. 14, 15

Holotype male.—Length 1.7 mm; greatest width 1.2 mm, at midlength. Color of head black; labrum, pronotum, scutellum, and elytra dark reddish brown. Ventral surface dark reddish brown except antennae, maxillae, labrum, all palpi, prosternum, and legs testaceous. Body broadly oval, strongly convex. Head very finely, sparsely punctate (100×); interocular punctures separated by three to six times their diameters. Labrum similarly finely punctate but punctures closer together than on interocular area; punctures separated by two to four times their diameters. Last segment of maxillary palpus partially ringed with sensilla at base. Pronotum with few very fine and very sparse punctures laterally; disc extremely finely, sparsely punctate. Elytral punctures disarrayed; moderately coarse discally, becoming very coarse laterally; discal punctures separated by one to three times their diameters; lateral punctures separated by one-half to one times their diameters. Sutural stria distinct and extending from apex anteriorly for about half the length of the elytron. Protibia in anterior view diverging slightly at base, then sides almost straight to apex; inner face of apical portion with a single large spine. Aedeagus as illustrated (Figs. 14, 15).



Figs. 14–15. *Chaetarthria milleri* n. sp., male genitalia: 14, ventral view; 15, lateral view.

Allotype.—Only the unique holotype is known.

Type-data.—Holotype male; ECUADOR: Napo Province, Puerto Nuevo, 8 July 1976, blacklight at river, J. Cohen; USNM Type No. 73830, deposited in the National Museum of Natural History, Smithsonian Institution.

Etymology.—I am pleased to name this species for Dr. David Miller, in recognition of his contributions to the systematics of the Hydrophilidae and especially his revision (1974) of the genus *Chaetarthria* which facilitated the recognition of the new taxa described above.

Because *C. milleri*, as well as *C. andrea* are from South America, both key to couplet 41 in Miller's key. Both may be distinguished by interpolating the following at couplet 41.

- 41(40). Elytra entirely dark reddish brown or dark reddish brown except sharply or diffusely paler at sides and apex; nearly glabrous; head and pronotum shining, not dull and granulate appearing 41a
- Elytra entirely reddish brown; pronotal disc and scutellum blackish; head black; head and pronotum dull and granulate appearing, micropunctate; elytra 0.9-1.1 mm long; male protibia with 2 small stalked discs on medial face of apical portion of protibia; Brazil *granulata* Miller
- 41a(41). Head black, pronotum and elytra dark reddish brown; male protibiae with 2 broad, flat, slanting setae on medial face; male genitalia sigmoid in lateral view; Brazil *brasilia* Miller
- Head black or dark reddish brown; pronotum dark reddish brown; elytra uniformly reddish-brown or reddish-brown at base and distinctly testaceous apically (extending obliquely about to elytral midlength); male protibiae without broad, flat, slanting setae or suckerlike setae on medial face; male genitalia not sigmoid in lateral view 41b
- 41b(41a). Elytra black with abruptly testaceous apices; male genitalia with broad median lobe (Fig. 12); Ecuador *andrea* n. sp.
- Elytra uniformly reddish-brown; male genitalia with bifurcate median lobe (Fig. 14); Ecuador *milleri* n. sp.

When the new species *C. milleri* is keyed through the first rubric of Miller's (1974) key (i.e., to the North American species), it keys to couplet 22 where it may be separated from *C. atra* by its South American distribution and the following characters: male protibia not "elbowed," male protibia with single large spine on medial face, and different shape of male genitalia.

The distinctive single large spine on the medial face of the male protibia will distinguish *C. milleri* from all other species of *Chaetarthria* from South America except *C. andrea*, new species. From the Ecuadorian *C. andrea*, new species, *C. milleri*, new species is easily recognized by its uniformly reddish-brown elytra instead of having black elytra with abruptly testaceous apices. Also, the male genitalia of *C. milleri*, new species, has a bifurcate median lobe (Fig. 14); whereas, the median lobe of *C. andrea*, new species, is a broad lobe (Fig. 12).

The new species *C. milleri* fits into Miller's *glabra* group along with *C. glabra* Sharp, *C. hintoni* Miller, *C. laeticula* Miller, *C. truncata* Miller, and *C. andrea*, new species, because they all share the characters for the group given under the description of *C. andrea*, new species. Consequently, *C. milleri* is the sixth species in this group, and it is the second species of the group known from South America.

In Miller's proposed phylogeny for the New World species of

Chaetarthria, *C. milleri* should be placed next to *C. glabra* with which it is very similar in being smooth, shining, and almost completely without punctures or vestiture. However, *C. milleri*, new species, has the sides of the elytra very coarsely, densely punctate; whereas, on *C. glabra* these punctures are much finer and sparser. Also, *C. milleri* is known only from South America and *C. glabra* only from Central America. Furthermore, the male genitalia of *C. milleri* has a bifurcate median lobe, and *C. glabra* has a broad, undivided median lobe.

Acknowledgments

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Literature Cited

- Miller, D. R. 1974. Revision of the New World *Chaetarthria* (Coleoptera: Hydrophilidae). *Entomologica Americana* 49(1):1-123.

Smithsonian Institution, Washington, D.C. 20560.